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"hearts" are present in X-XIII, the posterior ones being the largest.

Testes and large conspicuous spermiducal funnels are present in X and XI, sperm sacs in XI and XII, ovaries in XIII and spermathecæ in VIII and IX. The sperm ducts of either side unite in XVI to form a common duct. The pair of spermiducal glands is in XVIII. They are tubular and much contorted and form flattened masses of considerable size. The terminal part forms a muscular duct which opens to the exterior laterad of the penial setæ, though in the same pore. The common sperm duct of either side unites with the spermiducal gland of its own side at the proximal part of the muscular duct.

Three species of earthworms quite closely allied to *M. americanus* have been described from the Pacific Coast region by Eisen and by Benham under the generic names *Argilophilus* and *Plutellus*, which have since been included by Beddard in the genus *Megascolides*; but the great majority of the nearly related worms are found in the Australian region. *M. americanus* differs from its North American relatives in the presence of numerous small nephridia in each somite instead of two large ones, in the extent of the clitellum and in several other characters.

Our knowledge of the proper classification of species included by different writers in the genera *Megascolides*, *Cryptodrilus*, *Argilophilus* and *Plutellus* is at present in a very unsatisfactory state, but the species described above is quite certainly a *Megascolides*.

UNIV. OF ILLINOIS, FEB. 25, 1897.

BIRDS OF NEW GUINEA.

BY GEO. S. MEAD.

(Continued from Vol. XXX, page 710.)

Merops ornatus—the Variegated Bee-eater, according to Dr. Bennett the harbinger of spring in Australia, is abundant in New Guinea where it is sometimes seen in enormous flocks or succession of flocks, flying easily but not ceaselessly as if on mi-

gration bent. It is of a social disposition congregating together at all times like swallows and making nests in holes along river banks after the manner of the *Hirundinidæ*. Here in the sand excavations without soft nesting materials, five or six white eggs are laid. Although the bird is a pronounced bee-eater, its diet is not so limited as not to include other insects as well.

This species is of elegant form, slender and smooth-feathered. Light green, blue, black and saffron brown are the intermingled colors. From the fan-shaped tail project straight out two black quill shafts, an inch or more from the middle feathers, terminating in small spatulas. Herein lies the particular feature of this pretty bird. The long, sharp black bill with its curving line of beauty adds another element to make it as Mr. Wallace found years ago, "one of the most graceful and interesting objects a naturalist can see for the first time."

On the head plays an exquisite shade of brown extending down the neck. A similar tint lines the under side of the wings as well. The under parts are a vivid green approaching to light blue on the abdomen, but on the sides a spot or two of black may be traced. Blue of a decided depth covers the lower back, rump and throat. The wings above are of the same color as the under parts, becoming brown to dusky on the scapulars and secondaries. So varied is the coloration and so delicate the blending that the most elaborate description would not exhaust the catalogue of charms. Yet the bird after all is easily identified, besides being common in museums and of wide distribution. Moreover it is not of shy habits but may frequently be seen darting forth from some twig after the manner of flycatchers in pursuit of insects, but little disturbed by the notice its graceful motions have excited. Length about 7 inches.

An exceedingly abundant bird in New Guinea, Queensland and everywhere in Malaysia is the Glossy Starling—*Calornis metallica* (Temminck). D'Albertis speaks of these starlings as flying in myriads over his house on Yule Island in June, at that time probably pursuing their migratory instincts which, however, in these low latitudes mean little more than a trip across

the Straits or over shallow seas. Mr. Moseley bears witness to the great numbers of this busy bird in his interesting Notes of a naturalist. He writes: "An immense tree with a tall stem free from branches, until at a great height it spread out into a wide and evenly-shaped crown, was full of the nests of the Metallic Starling. There must have been 300 or 400 nests in the tree; every available branch was full of them." The long slender body of this starling is entirely glossy black with purple, violet and green reflections. On the upper breast the overlaid plumes throw off a bronze or brownish tinge. The tail is spreading and graduated, the two middle feathers extending about an inch beyond the others. Length about 9 inches.

Speaking generally the Pittas or Ground Thrushes as they have been named, are of soft, brilliant and velvety plumage wherein the colors though contrasted, blend with most harmonious effect. In figure and shape they suggest the rail, having furthermore the short tail of that bird. In habits also they are not dissimilar, being shy and retiring, keeping within the gloom of the dense forest from whence their duplicated whistle sounds like a plaintive lament in the deep silence. They live chiefly upon insects and worms.

Pitta maxima or *gigas* found on the island of Gilolo, which Mr. Wallace rightly calls "one of the most beautiful birds of the East," is of large size being about 10 inches in length and standing to nearly the same height. This typical species is a glossy black above including the neck and throat. The under parts are velvety-white excepting the abdomen which is black but with the crissum and under tail coverts a fine scarlet, a characteristic mark of this family.

A shining blue beginning near the shoulder and banding the wings broadly, becoming less bright as it widens, adorns the sides. The specimen which is splendidly mounted and shown to great advantage in the Fairbank's Museum in St. Johnsbury, Vt., has a red feather in the upper tail coverts; whether this is anomalous may be questioned but I have also seen a white feather in one bird. The long strong legs of this giant of his tribe render it comparatively easy for him to make

rapid progress through the intricacies of the pathless woods; the wings seem little used.

Mr. Wallace found the beautiful *Pitta concinna* at Lomboek. It frequents the "dry plains densely covered with thickets, and carpeted with dead leaves" and was so shy that only by much strategy could Mr. Wallace get a shot at it. By imitating the peculiar whistling cry of two notes, he finally succeeded in shooting one of the birds that came near. They hop or run along the ground picking up insects, and on the slightest alarm take refuge in some thickets. The plumage is very soft and puffy. The upper body is a rich green, beneath a soft buff, very dark on the belly; around the vent and over the under tail-coverts lies the usual lovely crimson. The head is deep black divided by two narrow strips of blue and brown running over the crown as far as the nape. Bright blue appears in bands along the shoulders and near the tail. Throat, side face and neck are black as well as the under wing-coverts. A bunch of cloudy white lies near the black throat. A white spot or two marks some of the primaries. Bill black, feet brown. Length 6.5 inches.

Pitta strepitans is Australian but found in Southern New Guinea as well as on adjacent islands. In this species also the upper parts are dull green with black on the wings, and a white speculum, but dim blue plays over the upper wing-coverts and rump. The lower parts are mainly identical in color with those of *P. concinna*. In fact the chief variation apart from height and length, is in the coloration of the head. In the present species this is dark brown with black stripe intermediate. There is little significance in its name. Length 8.5 inches.

Pitta rufiventris from Gilolo and Batchian, is smaller than the preceding by at least an inch. Above green is the prevailing tint but of a paler cast. Blue as in the foregoing, the black being distributed in the same way also with the customary white speculum. Head and throat are rufous. The usual crimson somewhat dull, appears on the belly adjoining black. On the breast is a wide border of blue. There is little varia-

tion in the colors of the Pittas and but little difference in size or shape. The present bird is about 5 inches in length.

Pitta novæ-guinææ, notwithstanding the similarity between the Pittas generally is distinguished by somewhat more vivid colors than its congeners. Above it is a shining green, below a darker bluish-green. The head, entire neck and throat are black, the tail a dull green. The abdomen is black, giving space for the invariable crimson around the vent and upon the under tail-coverts. Much bright blue covers the upper wing-coverts, while the primaries have the customary white spot on their dark brown surface. Upon the rump this lovely blue is narrowed to the merest streak. A line of silvery white dividing the black throat from the oily-green breast is the specific mark. Length 6.5 inches.

Pitta macklotii is dull green above with blue and black on the wings and rump. Below the color is like that of the preceding species, though perhaps not quite so vivid. The cap is brown with bluish reflection. The throat below the chin is almost black. Total length 7 inches. This is about the average size of the Pittas and like his relations the *Macklotii* has the shy timid habits, retiring to the depths of thickets at the slightest alarm his whereabouts only to be suspected by the plaintive note uttered now and then.

Two or three species much resemble *Pitta novæguinææ*, the differences between them being but slight. In *P. rosenbergii* we find the colors somewhat more pronounced. Underneath along the sides is a length of purple gloss, while on the throat there is a greater extent of black. Length 7 inches. Habitat Mysore.

A local variety if not a distinct species belongs to Geelvink Bay and is dubbed *P. mafoorana* (Schlegel). Here also the colors are deeper, while the white spot does not appear at all. In all these instances the size is about the same.

The brighter green on the breast of the Mafoor Island Pitta fades into a greenish-blue on the sides. The larger upper tail-coverts are black, the lesser feathers green, identical with the coloration of the breast. *Coracopitta lugubris*, classed among the Pittidæ, is entirely black and of small size, reaching only

the length of 5.6 inches. The tail of this solitary species of its kind is rather longer than among the true Pittas. Its legs are long while a peculiar bristling of the frontal feathers distinguishes it still further from its family.

Honey-eaters are well represented in New Guinea and its islands; in fact several islands of the Malay Archipelago contain a species, even a genus peculiar to themselves. They are never large birds, the average size being perhaps 8 inches in length, but they differ largely in respect to plumage, many of them being plain, others conspicuous by their brilliancy or some striking arrangement of color. Mr. H. O. Forbes has told us how lovely certain forms of *Myzomela* are, and one in particular—*M. annabellæ*—collected in Timor-Laut, embellishes as frontispiece, "A Naturalist's Wanderings."

Ptilotis filigera (Gould)—the Streaked Honey-Eater—from Northern Australia and Southeastern New Guinea is only imperfectly described by its name. The streaks are rather obscure markings, spots or shadings upon a portion of the generally brownish surface. Bare whitish spaces irregular in form surround the eyes. Just above the extended line of bare skin lies a patch of black. Above this the head is dark brown, the same color as that of the long tail on its upper surface. The neck, throat, breast and sides are a bluish-gray, lighter on the throat. The under parts are a soft fawn color, at times reddish, particularly on the flanks. The upper parts are a delicate brown, mottled and streaked along the bend of the wings. The bill is unusually long, dark and strong. Total length 8 inches.

The naturalist Moseley of the Challenger Expedition saw many of these little birds together with a kindred species *P. crysalis* at Cape York where they were busily employed in sucking the honey or eating the insects in the scarlet blossoms of the *Erythrina* tree. The last mentioned Honey-eater—*P. crysalis*—Mr. Guillemard collected on the shores of New Guinea.

Ptilotis albonotata—the White-spotted Honey-eater—a new species when Salvadori named it twenty years ago, is also a plain member of the large family of the *Meliphagidæ*. The white spots of the present species are small the largest appearing just behind the ear. On the bend of the wings is a line of white,

while one or two more touches of white may be seen on the wing-coverts and middle of abdomen. The ground color above is yellowish-green, below buff. A distinct line of yellow marks the side of the face. Eye, bill and feet black or dusky. Total length 5 inches.

Ptilotis cinerea (Salvad.) the Gray Honey-eater is much larger than the preceding species measuring about 8 inches in length. Upper surface with tail is brown, gray of a somewhat dingy hue, marking the under body and head. The bill is noticeably strong and curved. Its color is black. The eyes are black and prominent. White quills are conspicuous on the wings and tail.

Another interesting member of the *Meliphagidæ* found by Senor D'Albertis in 1872 is *Melidectes torquatus*, so-called from the torque or partial circlet of white, around the neck. Like its race it has the curving bill, long tail, bare orbits and other peculiar marks which characterize the honey eaters. This species is fuscous above, tail and wings dark olivaceous, containing white spots on the black interscapular feathers. Black or dark appears on the side face and throat, and again over the upper breast below a band of white somewhat longer. This is margined below by a narrow line of dull yellow about the same tint as that around the eyes and side neck. Under parts are mainly whitish, passing into yellowish near the vent and much marked with black spots along the sides. Feet, bill and iris are almost black. The sexes do not differ noticeably and are both about 8.5 inches in total length.

EDITOR'S TABLE.

—THE greater part of the American newspaper press needs a radical change of heart in the matter of reporting on subjects which come within the domain of biology. It would pay the leading newspapers at least to have a scientific editor or referee to whom all paragraphs and articles on such subjects should be referred before publication. As the